

# Climate change beliefs and savings behavior: a macroeconomic perspective

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Climate change is projected to incur large damages to the global economy.

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3. Does **disagreement** over climate impacts matter?

**Consumption-savings model:** adjustment to perturbation in aggregate productivity process

- focus on partial equilibrium for analytical insights: aggregate capital exogenous

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- **Today's response** in savings rate to increased probability of low state **at any future point**  $\geq 0$
- Relevance of idiosyncratic state
  - Marginal propensity to save
  - Expected marginal value of savings in low vs high state
- Largest response for poor low-income agents who save



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**Empirical evidence:** data on climate beliefs and savings in 2 waves of UK panel survey

- Significant positive correlation between climate change concern index and savings choices
- Particularly driven by
  - extensive margin
  - low income individuals

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Aggregation of micro adjustments → macro effects?

DSGE framework: extended Krusell-Smith model

1. **Non-stationarity**: unanticipated time dependent shift in aggregate variable
2. Individual **beliefs** over **impact of trend** on stochastic productivity process
  - Bayesian updating

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Climate change interpretation

- Rising global temperature  $\uparrow$  probability of low productivity state
- Exogenous and **slow** shift
- Increase in temperature known, but uncertainty over economic impacts

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- Average beliefs matter for aggregate outcomes along the transition:
  - Climate concern effect on capital partly offsets exogenous physical damages
  - Transmission via wages: labor income  $\uparrow$  if capital higher, wealth inequality  $\downarrow$

DSGE framework: extended Krusell-Smith model

- Average beliefs matter for aggregate outcomes along the transition:
  - Climate concern effect on capital partly offsets exogenous physical damages
  - Transmission via wages: labor income  $\uparrow$  if capital higher, wealth inequality  $\downarrow$
- Heterogeneous effects of disagreement across wealth distribution
  - Effect on unconcerned in polarized economy
    - drop in interest rate: decreases asset returns, disincentivizes savings further (dominates for rich)
    - rise in wages: increases labor income (dominates for poor)
  - Comparison to analytical results in partial equilibrium:
    - Large effect of individual belief on savings **choice** of poor. But: **limited ability to self-insure**
    - General equilibrium effects dominate welfare outcomes, driven by higher savings of the rich
      - positive externality of savings

Climate change impacts on the macroeconomy

- Stochastic damages: Golosov et al. (2014), Cai and Lontzek (2019)
- Anticipation: Bilal and Rossi-Hansberg (2023), Hong et al. (2023), Bakkensen and Barrage (2022)

**Contribution:** joint focus on individual choices and uncertainty

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Disagreement over aggregate (climate) processes

- Bakkensen et al. (2023), Chen et al. (2012), Lontzek et al. (2024)

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Heterogeneous agents and aggregate risks

- Krusell and Smith (1998), Broer et al. (2022)

**Contribution:** Non-stationarity, novel solution method for perceived law of motion

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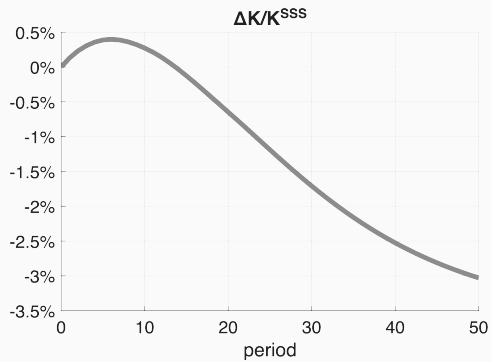
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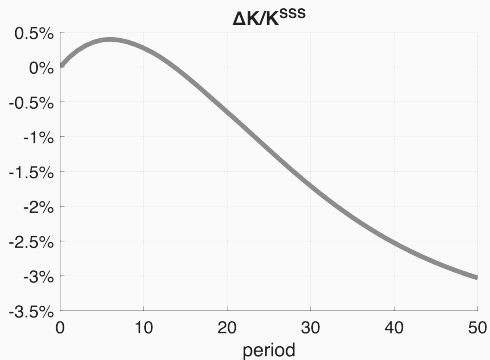
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